

**REMARKS**

This amendment is submitted in response to the Office Action dated October 29, 2009. After entry of this amendment, claims 1-32 will continue to be pending in the application. Claims 1, 13, 20, 28 and 32 have been amended. No new matter has been added. The specification has been amended to correct a typo.

Reconsideration and allowance is respectfully requested in view of the remarks made below.

**1. The Rejection under 35 U.S.C. §101**

Claims 1-12 and 17-19 have been rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. In particular the Office Action indicates that claim 1 recites an abstract process not tied to a particular machine.

In response to the rejection, the Applicant has amended claim 1 to now require that the method be "executed by a processor". The Applicant believes that claim 1 as amended conforms with the Interim Examination Instructions for Evaluating Subject Matter Eligibility under 35 USC § 101 issued by the USPTO on 24 August 2009. Claim 1 as amended falls within an allowable category of invention, namely a process which is tied to a particular machine or apparatus. The rejection of claims 2-12 and 17-19, which depend from claim 1 are also in condition for allowance by virtue of the amendment of claim 1.

## **2. Allowable Subject Matter**

Claims 4, 9-10, 12 and 22 have been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The Applicant appreciates the indication of allowable subject matter; however the Applicant believes that the claims from which claims 4, 9-10, 12 and 22 depend are now in condition for allowance and requests notice to that effect.

## **3. The Rejections under 35 U.S.C. § 103**

Claims 1-3, 5-8, 17-21, 23-25 and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 7,076,072 to Feng et al. (hereinafter "Feng").

"To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)." See MPEP 2143.03.

Feng describes a system 10 which has acoustic sensors 22, 24 arranged to detect acoustic excitation from sources 12, 14 and 16. See *Feng*, col. 3 lines 32-36. Sensors 22 and 24 are of directional type and are in the form of microphones 23. See *Feng*, col. 3, lines 62-65. Feng relies on two or more directional sensors that are combined to give an adaptive directional signal. Notably, it is the sensors of Feng which are directional, such as the sensor being implemented by two port microphones.

Claims 1 and 32, as amended, require "deriving from two omni-directional microphones a first signal having an omni-directional polar pattern and a second signal having a bi-directional polar pattern". Claim 20, as amended, now requires an "apparatus including an analog-to-digital converter for producing from two omni-directional microphones." Feng does not meet the limitations of claims 1, 20 and 32 as now amended since Feng does not disclose having omni-directional microphones, i.e. microphones that operate in every direction. Feng uses frequency

dependent optimization of the signal direction, in contrast to the technique of the present invention which is typically applied in the time domain and also is applicable to the frequency domain. In the present invention, deriving the bi-directional signal from two omni-directional microphones gives significantly more flexibility in the manner in which the first omni-directional signal and second bi-directional signal may be matched in amplitude and phase, as discussed at page 8 lines 5-11 and page 9 lines 27-29 of the present specification. In contrast, the system of Feng must rely on the extent to which the different hardware sensors are matched at the time of fabrication.

Claims 1, 20 and 32 have further been amended to now require “using a gradient method.” The claims as amended require that the signal weights used when combining the omni-directional signal with the bi-directional signal should be calculated using a gradient approach. As conceded by the Examiner in relation to the gradient approach of calculating the weights set forth in claim 4 of the present application, Feng nowhere suggests or discloses that the signal weights used to derive a combined adaptive directional signal could be calculated using a gradient method. Using a gradient method to calculate the signal weights is an efficient and accurate way of calculating the optimum beam shape, and avoids the need for iterative calculation, feedback loops and potential instability, and provides computational efficiency. For at least this reason claims 1, 20 and 32 are in condition for allowance.

It is further noted that the Examiner concedes that Feng does not explicitly disclose the second signal having a bi-directional polar pattern. It is submitted that it would not be obvious to derive the present invention of claims 1, 20 and 32 as amended, as the use of a gradient technique to adaptively combine a bi-directional and omni-directional signal, each obtained from the same pair of omni-directional microphones, is not suggested by Feng, nor would the method set out in claim 1 be obvious in light of Feng.

For at least the reasons set out above, a *prima facie* case for obviousness is not established for claims 1, 20 and 32. Claims 2-3, 5-8, 17-19, 21, and 23-25 are also in condition for allowance by virtue of their dependence upon allowable claims 1, 20 and 32.

Claims 11 and 27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Feng in view of U.S. Patent No. 5,384,843 to Masuda et al. (hereinafter "Masuda").

Masuda does not remedy the deficiencies noted above with respect to Feng and claims 1 and 20. Claims 11 and 27 are in condition for allowance by virtue of their dependence upon allowable base claims.

Claims 13-14, 28 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Feng in view of U.S. Patent No. 7,120,262 to Klinke (hereinafter "Klinke").

Klinke does not remedy the deficiencies noted above with respect to Feng and claims 1 and 20. Claims 13-14, 28 and 29 are in condition for allowance by virtue of their dependence upon allowable base claims.

Claims 15 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Feng in view of Klinke and further in view of U.S. Patent No. 7,324,649 to Knapp et al. (hereinafter "Knapp").

Neither Knapp nor Klinke remedy the deficiencies noted above with respect to Feng and claims 1 and 20. Claims 15 and 30 are in condition for allowance by virtue of their dependence upon allowable base claims.

Claims 16 and 31 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Feng in view of Klinke and further in view of U.S. Patent No. 7,471,798 to Warren (hereinafter "Warren").

Neither Klinke nor Warren remedy the deficiencies noted above with respect to Feng and claims 1 and 20. Claims 16 and 33 are in condition for allowance by virtue of their dependence upon allowable base claims.

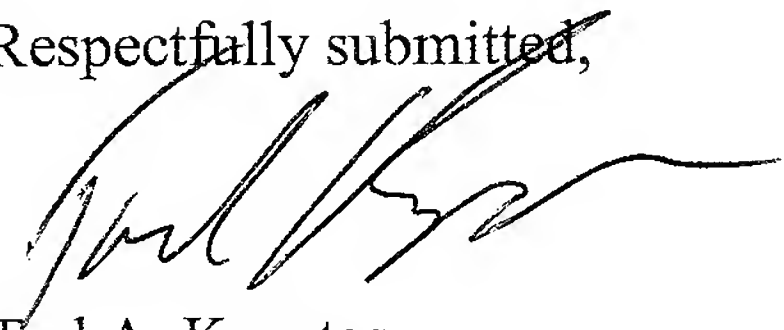
Claim 26 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Feng in view of U.S. Patent No. 5,627,799 to Hoshuyama (hereinafter "Hoshuyama").

Hoshuyama does not remedy the deficiencies noted above with respect to Feng and claim 20. Claim 26 is in condition for allowance by virtue of its dependence upon allowable base claims.

**4. Conclusion**

Applicant has made an earnest effort to place this application in condition for allowance. If the Examiner feels that a telephone interview would expedite prosecution of this patent application, he or she is respectfully invited to telephone the undersigned at 215-599-0600. Contact with the undersigned via electronic mail at **takupstas@patentwise.com** is hereby authorized<sup>1</sup> per MPEP 502.03.

Respectfully submitted,



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<sup>1</sup> Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file.